

adherent, and but little thickened. Beneath it the bone was found everywhere honey-combed by large foramina; the osseous matter around each foramen blending with that around the others in its neighbourhood, and giving rise to minute fissures and irregularities, running in every direction.

At different points cloaca opened on the surface, and communicated with a central cylindrical canal, containing an undetached and spongy sequestrum. This canal was filled with pus, and formed an abscess in the interior of the bone. The section of this part of the bone and the surface show that new bone was being deposited from the periosteum and its processes, and that absorption was going on internally.

The lower third presented fewer marks of disease. It was, however, considerably enlarged; several enlarged foramina were seen on the anterior surface; while, on the posterior surface, a cloaca, extending into a purulent cavity, in the interior of the bone, and some irregularities on the surface, constituted the changes to be noted.

45 LA FAYETTE PLACE, NEW YORK, March 1858.

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ART. XIII.—*Account of a Monster of the Genus Peracephalus*. By WALTER F. ATLEE, M. D. (Read before the Biological Society of Philadelphia, March 1, 1858.)

THIS monster was the product of a double gestation, the mother being delivered at seven months. The child born first lived fifty-five hours; it was a female, and perfect with the exception of one club-foot; this monster came away about twenty minutes afterwards. One placenta was common to both. The mother was a healthy woman who had previously borne three children, in as many confinements. In the first two pregnancies the child was female, and born at seven months; in the third the child was male, and born at eight months and a half. The woman had received, so far as is known, no fall or fright in the course of her pregnancy.

The monster has no head or upper extremities. The trunk and lower extremities are of a size corresponding to those of a well-formed fetus of seven months. A want of perfect symmetry, however, is very manifest, in the two halves of the trunk, which is remarkable for a number of elevations, with depressions between them. These elevations are due to the accumulation of a great quantity of cellular tissue. This sort of lumpy condition exists likewise in the lower limbs, which present, in addition, several other imperfections. The feet are turned inwards, and they possess but four toes, two of which, the smallest, on one foot, are not separated. The external organs of generation are those of the female; the anus exists.

Upon the front of the trunk, between the umbilicus and its upper extremity, is something having the appearance of a small empty bag or bladder, attached

by a rather narrow pedicle. Both above and below this bag is a small tuft of hair. Towards the sides of the thorax, in the places usually occupied by the nipples, are small round orifices.

For the sake of preserving the original appearance of this monster, which was deposited in the collection of the Biological Society of this city, the examination made of its internal structure was very limited; it was confined, in fact, to an examination of the spinal column. The sacrum was found to have its concavity looking backwards; the lumbar vertebrae are five in number, and the dorsal twelve; at the commencement of the cervical region the spine is bent forwards and downwards, and it leads, by a chain of small rudimentary bones, imperfectly formed but evident rudiments of vertebrae and a cranium, to the empty bag, mentioned as existing on the front of the thorax. The existence of a few hairs in this place, rudiments of the hairy scalp, had already foretold, what a slight dissection has sufficed to prove, as to the termination of the vertebral column.

According to the usually adopted classification of Geoffroy St. Hilaire, in his *Traité de Teratologie*, this monster is one of the genus *peracephalus*, the Greek *περα*, beyond or further than, being prefixed to *acephalus*, to mark a still greater deformity, the thoracic members being absent as well as the head.

St. Hilaire states that about fifty cases of this form of monstrosity have been recorded, and that from their examination it appears that, generally—they are not born of women in labor for the first time; delivery takes place from the sixth to the eighth month; the gestation is double; the placenta is common to both the children; the other child is well-formed, the sex is the same; and the acephalic child is almost never born first. All these circumstances, said by St. Hilaire to generally occur, have been noticed in this instance as already stated; the only exception being that the first child had a club-foot, instead of being well-formed.

It is interesting to notice that, in animals, the only examples of this monstrosity have been in the sheep and the deer, ruminants both of them, and like man, generally uniparous. In all these examples—they are four in number—gestation was double.

As, for the sake of preserving the specimen, the dissection of this monster was not carried far, the principal modifications of the internal organization, found in these cases, will be given as they are stated by St. Hilaire. As in every other point his statements correspond to what occurred and was found in this case, there is no reason to doubt that they would also correspond to what would be found were the dissection completed.

The diaphragm is wanting, or, at most, the separation of the thorax from the abdomen is membranous. It will be recollected that a muscular separation of the thorax from the abdomen is only observed in mammiferous animals.

In the thorax the lungs are absent, or are in a completely rudimentary condition. Even their presence as rudimentary is very doubtful.

The heart is most usually absent. It has been said to be constantly absent,

but it is possible to prove the existence of an imperfect heart in some cases of acephalous children. This question of the existence of a heart is very interesting, for, according to Aristotle, who has reigned over science almost to the present day, it is the organ first formed.

What is true of the heart is true also of the liver, the spleen, and the pancreas. Their absence is the usual, their existence the exceptional case.

The alimentary canal constantly exists, but incomplete, and offering evident traces of imperfect development. The large intestine is always found; there is often, though not always, a considerable portion of small intestine; a small stomach is sometimes found, and even, in one case, the inferior extremity of the esophagus.

The urinary organs, after the intestinal canal, are the most constant parts. The organs of generation are as constant as those of urination, but they are very often imperfect, or even rudimentary.

The skeleton is always very incomplete, as are also the nervous, the muscular, and the vascular systems.

It will be noticed that the order in which the different organs of acephali disappear is almost exactly the order in which, in the series of normal beings, the organization is seen to be simplified, and to be successively degraded. Thus, in animals, the heart and the lungs disappear before the stomach, and this in its turn disappears before the genital organs, and above all, before the intestine, which is the most constant of all organs. Should this coincidence, between the degradation of the organism in the animal series, and the disappearance of so many organs in the acephali, be considered as only fortuitous, or does it depend upon necessary causes? Almost all departures from the normal condition can be explained by *arrests of development*, for they realize the normal conditions of the first ages of the life of the embryo. Now the primitive conditions of the organization of the embryo, are also the conditions of the organization of beings of the inferior degrees of the animal scale. Hence the very natural explanation of this remarkable similarity existing between the modifications of acephali and those in the inferior classes of animals.

From the fact that the transitory or embryonic condition of a superior animal resembles, in a more or less striking manner, the permanent condition of another animal less elevated in the series, some authors have thought that every superior animal, before reaching its definite form, passes through the series of forms proper to the animals that are inferior to him, and that the diversity of species results from a series of *arrests*, effected at different degrees of the embryonic evolution. Serres (*Précis d'Anat. Transcendante Appliquée à la Physiologie*, Paris, 1842) lays it down as a principle that "human organogeny is a transitory comparative anatomy, as in its turn comparative anatomy is the fixed and permanent condition of the organogeny of man." This we do not believe to be true; every animal bears in itself, from its origin, the principle of its specific individuality, and the development of its

organism, conformably to the general tracing of the plan of structure proper to its species, is always for it a condition of existence. The term arrest of development, is not meant to express an embryonic condition, permanent for some animals, transitory for others, but a form which has remained quite similar to that which the embryos of these animals, and of others derived from the same fundamental type, possess at a certain period of their existence.

What Milne Edwards calls the "economy of means," by which the rich diversity of products, to be found in the animal creation, has been brought about, is most wonderful. One of the most powerful causes of this rich diversity, is the inequality in the degree of perfection reached by animals. All animals are equally perfect in their kind, as Cuvier says: they are perfectly fitted for the part they are to play, but this part is far from having always the same extent and importance.

It is only in the past few years that the true point of view under which the physiological study of monstrosities should be embraced has been rightly understood. All the facts and all the laws of teratology are only the consequences of embryonic laws and facts; and embryogeny, as the science is now understood, was only begun some fifty years ago. Embryogeny has for its fundamental basis, this principle, that the organs do not exist entirely formed, from the beginning, but, on the contrary, are formed at epochs, that vary for each of them. Necessarily very small and very simple when first formed, these organs increase in size and undergo developments.

Universally, until the 17th century, all monsters were destroyed. It was held to be a bold novelty when Riolan, one of the most distinguished men of his time, declared that six-fingered children might be allowed to live. Riolan taught, moreover, that monsters, half man and half animals, should rather be killed; as to monsters, made in the likeness of the devil, if allowed to live, they must be constantly shut up and kept concealed.<sup>1</sup> From the superstitions of that time, in the course of a century and a half, the science of monstrosities has risen to the highest considerations of natural philosophy.

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ART. XIV.—*Spontaneous Rupture of the Eye*. By ANDREW FLEMING, M. D., late Resident Physician to the Pennsylvania Hospital.

REUBEN POND, aged 50, seaman, a native of New Jersey, was admitted into the Pennsylvania Hospital Sept. 22, 1856.

Two years ago he had some disease of his right eye, which lasted for a month, when he lost the use of it entirely. Since that time it gave him no trouble or uneasiness until two days before his accident, when he suffered from a severe, acute and throbbing pain in it, but without increase of size.

<sup>1</sup> Riolan was Dean of the Faculty of Medicine, in Paris; he died in 1605.